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ABSTRACT

Through its cooperative education and industrial training program, Don Mariano Marcos Memorial State University (DMMMSU) in the Philippines provides 250-800 hours of work-based education to students enrolled in 3-, 4-, and 5-year programs of training for such occupations as professional engineer, technologist, teacher, and technician. At the undergraduate level, cooperative education and industrial training are an integral part of DMMMSU's programs engineering, teacher education, and technician training programs. Cooperative education and industrial training and a course titled Business and Industrial Cooperation are offered as elective courses in DMMMSU's graduate college. During the past 10 years, DMMMSU's cooperative education and industrial training program has been shown to offer the following benefits: (1) a balance has been established between theory and practice; (2) students have developed a better understanding of their chosen industries/careers; (3) students are able to be useful and productive immediately upon entering their chosen profession; (4) students' interest in their field of specialization has increased; (5) contacts between faculty and industry have increased; (6) faculty have been better able to meet the criteria established for faculty retention, tenure, and promotion; and (7) an avenue for technology transfer between DMMMSU and industry has been opened. Contains five references. (MN)

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CO-OPERATIVE EDUCATION AND INDUSTRIAL TRAINING: DMMMSU EXPERIENCE[1]

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SUMMARY

Industrial training in a real work environment, of university/college based students, is of great value to education and training. This type of applied learning as part of the curriculum of would be professional engineers, technologist, teachers, and technicians is described. DMMMSU have been running such a well managed and structured program for almost ten (10) years in close co-operation with business, industry, government and non-governmental organizations (BIG -NGO). This program established a curricular balance between theory and practice. The cooperative industrial training period of about 250 hours to 800 hours is an integral part of the curriculum and a requirement for graduation. The evaluation conducted by the cooperating industrial establishment representative, the faculty (Linkage Officers) and the student themselves, after the period of industrial experience are positive. Some of the problems encountered are with respect to the level and description of work to be done. At present, industrial training beyond, post-secondary and tertiary education is being pursued at the MA and Ph.D. level.

INTRODUCTION

The Don Mariano Marcos Memorial State University (DMMMSU) La Union, Philippines is one of the state institution of higher learning in the Ilocos Region which is entrusted with the responsibility of providing quality and relevant education along the arts, agriculture, fishery, engineering and natural sciences. The university is located in three (3) major campuses.

One of the decisions of the Board of Regents in 1984 is the adoption of co-operative education and industrial training in all curricular programs of the Mid-La Union Campus (MLUC) which is located in San Fernando, La Union with an enrollment of a little over 5,000 students. The university enrolment is a little over 10,000 students.

Curriculum Structure

The BS Engineering, Industrial Technology, Teacher Education and the post-secondary Technician Education are five (5), four (4) and three (3) years duration respectively. The sequence of academic stages and the period of co-operative industrial training is shown in the following table.

Curricula	Yr. 1			Yr. 2			Yr. 3			Yr. 4			Yr. 5		
Program	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Eng'g.	C	C	-	C	C	-	C	C	-	C	C	IT	C	C	-
Tchr.Educ.	C	C	-	C	C	-	C	C	IT	C	PT	-			

Tech.Educ.	C	C	-	C	C	-	C	C	IT	C	IT	-									
Technician	C	C	IT	C	C	IT	C	IT	-												

Legend: C - College
IT - Industrial Training along their major field of specialization
PT - Practice Teaching
\- - Optional Industrial Training

During the period of industrial training which form an integral part of all courses, student follows a program of instruction which put emphasis on educational values and career as agreed upon by co-operating establishment authorized representative, linkage officer (faculty) and the students.

Co-operative education and industrial training and Business and Industrial Co-operation are offered as an elective course in the Graduate College.

Discussion

During the last ten (10) years now, we have gained experience with industrial training of undergraduate in electrical and mechanical engineering, technology, teacher, and technician education.

Emphasizing the practical side of engineering and technology education through industrial training deployment helps make the student much more interested in their general and professional education studies which leads to the development of man in his totality with a critical mind appropriate technology to adopt to his environment and contribute to the balance growth and

progress of the society he serves. It established a curricular balance between theory and practice. This in effect enhanced the actual curriculum vis-avis the intended and implemented curriculum.

The industrial training exposed the students to real-life in the industry. It enable them to understand the industry and the career they are in. This will result to a shorter period of further training after graduation. This situation is favorable to the first employer since more time will be devoted to productive work. The industrial training enables the graduates to be immediately useful and productive with the industry or professional organizations to which he is appointed.

Industrial training deployment in addition to their obvious advantages, provided "emersion periods" after their general, professional and specialized education and training at the college. Students returning from industrial training exhibited higher degree of interest in their field of specialization and are ready to proceed to the next academic stage. Their exposure to professional engineers, technologist, specialists and technician in an industrial environment makes positive contribution in applying academic knowledge, skills and attitude to real-life situation. These experience contributed to the overall competitiveness of the Filipino students/graduates.

Conclusion

Engineering and technology education as an "industry" should

constantly endeavor to ensure that its product, the graduates, has the entrepreneurial and innovative skills and technical expertise required by the industry. Graduate should be able to translate their education and training to resolve problems in the form they are met in industry. Good academic preparation coupled with industrial training enhances this possibility. The co-operative education and industrial training program has positive advantages for the college, faculty, and the students. The contact with the industry help the college in touch with the new development in R & D areas of industry.

The program has increased the ability of our faculty members to meet the major criteria used in the evaluation of faculty performance for retention, tenures and promotion. The faculty contact with business firms through this program has provided many possibilities for creative research. It has served as an avenue for technology transfer. In a nutshell, co-operative education and industry training bridges the gap between the university and the other members of the educational community into a broad and productive social relationship - toward our dream as an industrializing country by the year 2000 and beyond.

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